

Medical Science

To Cite:

Atif A, Wajid F, Abid L, Khan E, Shahzadi H, Saqib Z, Nadeem A, Afzaal T, Saghir A, Arif A, Iqbal MZ. Knowledge and awareness regarding Hepatitis B infection among health care provider students of a private medical college in Lahore Pakistan. *Medical Science* 2024; 28: e54ms3357 doi: <https://doi.org/10.54905/disssi.v28i148.e54ms3357>

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Peer-Review History

Received: 25 March 2024

Reviewed & Revised: 29/March/2024 to 31/May/2024

Accepted: 04 June 2024

Published: 12 June 2024

Peer-review Method

External peer-review was done through double-blind method.

Medical Science

pISSN 2321-7359; eISSN 2321-7367



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Knowledge and awareness regarding Hepatitis B infection among health care provider students of a private medical college in Lahore Pakistan

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ABSTRACT

Hepatitis B infection (HBV) is the primary infection worldwide including in Pakistan. The current study aims to evaluate the knowledge, attitude, and practice toward HBV infection in future healthcare providers. A cross-sectional observational study conducted on 251 students (84 from pharmacy, 86 from medicine, 81 from dentistry faculty) of private medical college/university. By using a validated Questionnaire, the cross-sectional study was done, to assess the knowledge, perception, and attitude regarding HBV infection among private medical college/university students. The pharmacy, medicine, and dentistry students have better knowledge and practice with a positive attitude. In all variables, only faculty have a direct relation with knowledge (p value= 0.008). There is no association between our study variable and attitude. A significant association (p value= 0.006) was observed between faculty and practice compared to all study variables. The current study participants have better knowledge and good practice with positive attitude towards HBV.

Keywords: Hepatitis B infection (HBV), pharmacy, Questionnaire, Communicable diseases

1. INTRODUCTION

Communicable diseases are spreading daily in the world, specifically in low and middle-income countries (Emadi et al., 2021). One of the infectious diseases is hepatitis B, a common mode of transmission of chronic Hepatitis B through

infected mothers (Hu and Yu, 2020). Hepatitis B virus (HBV) belongs to hepadnaviridae family. Hepatitis B virus is a non-cytopathic virus with a practically double-stranded circular DNA genome (Li et al., 2020). Two kinds of transmission have been seen: vertical transmission from the mother to the neonate and horizontal transmission from child to child or mother to child (Ansari et al., 2023). Other ways of transmission include nosocomial, sexual, through scratches and cuts (open), and sharing of needles (Fourati and Pawlowsky, 2016). The transmission of HBV is not through the GIT and respiratory tract of infected patients (Wang and Duan, 2021).

About 296 million individuals worldwide suffer from chronic hepatitis B (CHB) (Al-Busafi and Alwassief, 2024). HBV chronic infection infected infants (90%), children aged 5 (30-50%), and adults (5-10%) (Guvenir and Arikan, 2020). The prevalence of hepatitis B is about 257-291 million worldwide (Lim et al., 2020). The seroprevalence of HBsAg globally was 3.6%, with the greatest endemicity of 8.8% in Africa and 5.3% in the Pacific regions (Kim and Kim, 2018). As the prevalence increases, the reduction in income status of 0.9% in high-income, 4% in upper-middle-income, 4.4% in lower-middle-income, and 6.2% in low-income regions of Africa and the Pacific regions occur (Nayagam and Thursz, 2019). After liver transplantation, HBV recurrence (Lenci et al., 2020). For reduction in the recurrence of HBV, antiviral therapy is used prophylactically (Orfanidou et al., 2021). The chances of hepatitis D virus (HDV) are high with HBV; HDV, needs HBV to replicate and cause infection (Sagnelli et al., 2021).

Globally, 90% of patients are living with undiagnosed hepatitis B (Xiao et al., 2020). More than 292 million people have hepatitis B, which remains untreated, develops into liver cirrhosis, and ultimately lead to death (Howell et al., 2021). In 2015, the mortality rate through liver carcinoma, chronic liver disease, and chronic Hepatitis B (CHB) was about 64,000 globally (Mårdh et al., 2020). In China, about 68% of patients have liver cirrhosis due to hepatitis B (Alberts et al., 2022). With funding from international agencies, the elimination of the Hepatitis B goal can be achieved in 2030 (Cox et al., 2020). The ten genotypes are significant in predicting HBV, B-C for Oceania and Asia, A and D (omnipresent), for Africa and Europe, J for Japan and Ryukyu, and E, F, G, and M for Asians (Song and Kim, 2016).

The diagnostic test for HBV is a Hybridization assay, amplification-based assays, Nucleic acid amplification technique, and PCR-based quantitative assays (Coffin et al., 2019). The primary complications of HBV are hepatocellular carcinoma and end-stage liver disease (Jiang et al., 2021). There is a high risk of hepatocellular carcinoma with a moderate serum HBV DNA level in patients having CHB (Kim et al., 2020). Manifestations regarding HBV: 1) Hepatic manifestations include cryoglobulinemia vasculitis, 2) Rheumatological manifestations include arthritis, and 3) Renal manifestations include glomerulonephritis (Mazzaro et al., 2022). Vaccination, through which many dreadful viral diseases control (Andrei, 2021). FDA-approved HEPLISAV-B vaccine for HBV (Lee and Lim, 2021).

The effectiveness of two doses of HEPLISAV-B is higher than the three doses of ENGERIX-B for HBV (Amjad et al., 2021). With the availability of effective vaccines, about 900,000 deaths occur every year in the world due to HBV (Rybicka and Bielawski, 2020). HBV patients treat with immunomodulators, including nuclear analogs such as tenofovir alanine, and entecavir with pegylated type-I Interferons (Li et al., 2022). Long-term use of Tenofovir causes bone diseases and injury to renal tubules and entecavir causes carcinogenesis (Gane, 2017). Patients who are resistant to Lamivudine cytidine therapy are treated with specific dosages of Adefovir dipivoxil every day for 48 weeks in chronic HBV (Singh et al., 2018). According to the new recommendation for HBV, entecavir and Tenofovir alafenamide are utilized.

Patients treated with Tenofovir alafenamide (TAF) show a better bone and renal system safety profile than Tenofovir disoproxil fumarate (TDF). To prevent vertical transmission during pregnancy in the fetus, TAF is the first therapy line (Ding et al., 2020). Patients show less adherence to medication due to forgetfulness, any change in routine, young age, therapy recently initiated, and adverse reactions (Allard et al., 2020). The primary objective of this study is to check the knowledge and awareness of future healthcare providers about hepatitis B. Pre-final-year and final-year students are the future health care providers, directly provide health services to infected patients.

2. MATERIALS AND METHOD

The current study is a cross-sectional study conducted at a private medical college to evaluate the knowledge and awareness of Hepatitis B among pre-final-year and final-years of medicine, dentistry, and pharmacy students. The cross-sectional study performed by utilizing a validated questionnaire. This study was conducted from 10 Oct 2022 to 30 Nov 2022. The primary outcome of this study was to analyze several elements and gauge the future medical professionals' knowledge, attitudes, and practice regarding hepatitis B

infection at private medical colleges. The sample size of this research is 251 (84 from pharmacy, 86 from medicines, and 81 from dentistry). Our current research included all students who are willing to engage in this study and complete the questionnaire that has distributed.

The students of 1st year, 2nd year, and 3rd year of medicine, dentistry, and pharmacy from private medical college excluded from our current study. The physiotherapy students from private medical college also excluded from our current research. The questionnaire identifies and evaluate the knowledge, attitude, and perception associated with knowledge and awareness regarding Hepatitis B infection among healthcare providers of private colleges of pre-final-year and final-year medicine, dentistry, and pharmacy students. Participants in this study categorized into age, gender, marital status, living status, and study year. The questionnaire consists of 30 questions that are categorized into three main sections to be answered. A validated questionnaire used to evaluate the knowledge, attitude, and practice of the respondents towards hepatitis B infection.

The questionnaire developed with a linear scale where section A (attitude-based) strongly disagree, disagree, neutral, agree, and strongly agree. The section B (Knowledge-based) based on the selection of the right answer. The section C (practice-based) based on yes or no answers. An informed consent form, the first part of the questionnaire including participants' demographic information like age, gender, living status, faculty, and study year. In the 2nd part, ten attitude-based questions are included in the form. In the 3rd part, ten knowledge-based questions are included in the form. In the 4th part, ten practice-based questions are included.

The attitude-based questions are scored from 1 to 5. Strongly disagree (score 1), disagree (score 2), neutral (score 3), strongly agree (score 4), and agree (score 5). The knowledge-based questions are scored 0 and 1. 0 for each wrong answer and 1 for each right answer. The practice-based questions where respondents answer according to their understanding in YES or NO. The ethical approval for this research is granted by a private medical college, for the purpose to collect all demographics information of participants with informed consent form. After reviewing all the ethical aspects, the Faculty of Research Committee granted ethical clearance to our research. The ethical approval number for this study is ZI/03/22.

Statistical Analysis

The data was collected from the respondents using a validated Questionnaire, and found in categories. The significant p-value is <0.05 in our current study. The novelty of data analyzed by using the Kolmogorov-Smirnov test, kurtosis, and skewness. All the categorical data was statistically evaluated using the chi-square test, and Fisher's exact test. Moreover, the effect size was calculated using Phi square and Cramer's V rule.

3. RESULTS

Medicines, pharmacy, and dentistry students participated in this study. The medicine faculty has a higher participation rate than other faculties. About 53.4% of females participated in this study. Further demographic information of respondents is given in (Table 1). About 66.9% of non-hosteller students participated in this study.

Table 1 The demographic information of respondents.

Variables	N%
FACULTY	
Pharmacy	84 (33.5)
Medicine	86 (34.3)
BDS	81 (32.3)
YEAR OF STUDY	
Pre-final	138 (55.0)
Final	113 (45.0)
PLACE OF STUDY	
Hosteller	83 (33.1)
Non- Hosteller	168 (66.9)
GENDER	

Male	117 (46.6)
Female	134 (53.4)
MARITAL STATUS	
Single	244 (97.2)
Married	7 (2.8)

Pre-final-year students have 63.8% adequate knowledge about hepatitis B infection. About 67.5% of male participants have adequate knowledge towards HBV. More information regarding knowledge of participants about hepatitis B infection is given in (Table 2).

Table 2 Knowledge of participants

Variables	Non-adequate	Adequate	P value
FACULTY			
Pharmacy	21 (25.0)	63 (75.0)	0.008
Medicine	34 (39.5)	52 (60.5)	
BDS	39 (48.1)	42 (51.9)	
YEAR OF STUDY			
Pre-final	50 (36.2)	88 (63.8)	0.659
Final	44 (38.9)	69 (61.1)	
PLACE OF STUDY			
Hosteller	30 (36.1)	53 (63.9)	0.764
Non- Hosteller	64 (38.1)	104 (61.9)	
GENDER			
Male	38 (32.5)	79 (67.5)	0.128
Female	56 (41.8)	78 (58.2)	
MARITAL STATUS			
Single	91 (37.3)	153 (62.7)	0.764
Married	3 (42.9)	4 (57.1)	

The pharmacy faculty has 92.9% positive attitude towards hepatitis B. About 89.9% of non-hosteller students have positive attitude towards HBV. Further information about attitude of respondents regarding Hepatitis B infection is given in (Table 3).

Table 3 Attitude of participants

Variables	Neutral	Positive	P value
FACULTY			
Pharmacy	6 (7.1)	78 (92.9)	0.119
Medicine	14 (16.3)	72 (83.7)	
BDS	7 (8.6)	74 (91.4)	
YEAR OF STUDY			
Pre-final	11 (8.0)	127 (92.0)	0.115
Final	16 (14.2)	97 (85.8)	
PLACE OF STUDY			
Hosteller	10 (12.0)	73 (88.0)	0.643
Non- Hosteller	17 (10.1)	151 (89.9)	
GENDER			

Male	13 (11.1)	104 (88.9)	0.866
Female	14 (10.4)	120 (89.6)	
MARITAL STATUS			
Single	25 (10.2)	219 (89.8)	0.123
Married	2 (28.6)	5 (71.4)	

About 71.7% of final-year participants have a fair practice regarding the hepatitis B infection. Approximately 72.4% of female students have a fair practice towards Hepatitis B infection. Further information of participants about practice regarding Hepatitis B infection is given in (Table 4).

Table 4 Practice of participants

Variables	Poor practice	Fair practice	Good practice	P value
FACULTY				
Pharmacy	8 (9.5)	68 (81.0)	8 (9.5)	0.006
Medicine	4 (4.7)	56 (65.1)	26 (30.2)	
BDS	11 (13.6)	54 (66.7)	16 (19.8)	
YEAR OF STUDY				
Pre-final	15 (10.9)	97 (70.3)	26 (18.8)	0.557
Final	8 (7.1)	81 (71.7)	24 (21.2)	
PLACE OF STUDY				
Hosteller	10 (12.0)	54 (65.1)	19 (22.9)	0.321
Non- Hosteller	13 (7.7)	124 (73.8)	31 (18.5)	
GENDER				
Male	13 (11.1)	81 (69.2)	23 (19.7)	0.606
Female	10 (7.5)	97 (72.4)	27 (20.1)	
MARITAL STATUS				
Single	22 (9.0)	173 (70.9)	49 (20.1)	0.852
Married	1 (14.3)	5 (71.4)	1 (14.3)	

4. DISCUSSION

Our current study shows that the adequate knowledge of pharmacy students is 75.0% compared to BDS and medicine students. A p-value of 0.008, which is significantly associated with faculty and knowledge about HBV. The reason behind that is that pharmacy students have deep knowledge related to hepatitis B. The result of our survey aligns with the survey conducted in 2016 in Northwest Ethiopia (Abdela et al., 2016). The majority of students had a positive attitude regarding hepatitis B infection. The attitude of pharmacy students (92.9%) is better than BDS and medical students. A p-value of 0.119, indicates the non-significant relationship between faculty and attitude towards HBV. A similar study conducted in Malaysia in 2018, was in contrast with our recent study (Abidin et al., 2019).

The pharmacy students have a fair practice of hepatitis B with a percentage of 81.0. The medical students have good practice (30.2%) regarding HBV. A p-value of 0.006, shows a significant correlation with faculty and practices towards HBV. A similar study conducted in 2021 in Vietnam is in contrast with our present study findings. The knowledge of pre-final year students was adequate, with a percentage of 63.8. Hence the year of study and expertise of participants shows non-significant correlation, with a P-value of 0.659. The reason behind this is that the pre-final students recently studied about hepatitis infection. The findings of the current study are quite similar to the study conducted in 2019 in Hohoe, Ghana (Osei et al., 2019). A large number of participants in the pre-final year had positive attitudes (92.0%) toward hepatitis b infection.

A p-value of 0.115, shows that non-significant association between the study year and the attitude of the participants toward HBV. The study conducted in 2019 in Sudan is similar to the current study's findings (Mursy and Mohamed, 2019). The final year students had fair practice (71.7%) whereas the participants from the final year department had good practice (21.2%) regarding HBV. A p-value of 0.557, shows that the non-significant relationship exists between the year of study and the practice of participants toward HBV. The result of the current study is in line with the study conducted in 2020 in Nepal (Shrestha et al., 2020). The adequate knowledge of participants about HBV who are living in hostels (63.9%) is better compared to the non-hosteller. The p-value of 0.764, indicates the non-significant association between the place of study and knowledge regarding HBV.

A study conducted at AIMST University, Malaysia, among 76% of hostel residents, agrees with the research and signifies the importance of knowledge about Hepatitis B (Upadhyay et al., 2020). The non-hosteller participants show a more positive attitude (89.9%) in comparison with those who are living in hostels towards HBV, which is likewise statistically significant. There is no association (p-value = 0.643) between attitude regarding HBV and place of study. A study conducted in 2022 in Jordan is in line with our current findings (Alaridah et al., 2023). Moreover, the non-hostellers have fair practice regarding hepatitis B infection, showing 73.8%, but 22.9% of hostellers showed good practice with an insignificant p-value (0.321), again showing no relation between practice and place of study. The study conducted at Haramaya University, Ethiopia, in 2013 aligns with our current findings (Mesfin and Kibret, 2013).

The study data showed that the knowledge of participants regarding hepatitis B infection is adequate in males (67.5%) than in females (58.2%). The p-value of 0.128 suggests that the outcome of the study is insignificant. The study's findings were quite similar to the survey conducted in 2015 in India about hepatitis B among nursing students (Reang et al., 2015). The female participants exhibit an 89.6% positive attitude regarding the disease, while male participants exhibit an 88.9% positive attitude. The p-value (0.866) indicates that this difference lacks statistical significance. There is no correlation present between the gender of the participant and the attitude towards hepatitis B infection. The findings of the current study are in line with the study conducted in Malaysia, in 2016 (Ahmad et al., 2016). The female participants had fair practice with a percentage of 72.4 and had good practice with 20.1%.

The main reason behind that females are more conscious about health. The p-value of 0.606, indicates that there is a non-significant correlation between place of study and practice towards HBV. The study conducted in 2010 in Karachi, Pakistan, is in contrast with the current study findings (Khan et al., 2010). The adequate knowledge of unmarried participants (62.7%) is better in comparison with the married ones. The p-value (0.764) shows that the result is insignificant, concluding that there is no association between marital status and knowledge. Our study shows that the understanding of singles is higher than that of the married participants. A study conducted in the University of Dammam, Eastern Region of Saudi Arabia in 2013 is in contrast with this study findings (Roien et al., 2021).

The attitude against hepatitis B infection among singles is 89.8% positive and among married respondents is 71.4% which is statistically insignificant with a p-value of 0.123. There is no association between attitude and marital status. The study conducted in TAIF; Kingdom of Saudi Arabia is in contrast with our present study findings (Elbur et al., 2017). Married students have fair practice (71.4%), while singles have good practice (20.1%), towards HBV. The insignificant p-value (0.852) shows that there is no association between marital status and practice regarding HBV. A study conducted in Bangladesh in 2024 is in contrast with our study findings (Tamanna et al., 2024).

5. CONCLUSION

The final-year and pre-final-year students have good knowledge and practice with a positive attitude regarding hepatitis B infection. In this study, the pharmacy faculty shows better knowledge and positive attitudes in comparison with other faculty whereas the faculty of medicine shows good practice towards HBV. The faculty has a direct association with the knowledge and practice of HBV infection.

Limitation

The study was conducted among the medicine, dentistry, and pharmacy students of a single college in Lahore, Pakistan. Hence, it is not generalized as restricted to a single private university, so, further studies will be conducted regarding HBV among different private colleges/universities.

Authors' Contributions

All the authors contribute equally, the final manuscript is read by all authors.

Acknowledgement

We are grateful to all participants contributed in study.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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